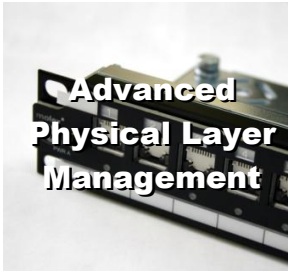
# MOLEX PREMISE NETWORKS

## Training Catalog

**Version 2.2**

***Bringing Advanced Physical Layer Lifecycle Management to Enterprises Worldwide***



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# MPN TRAINING

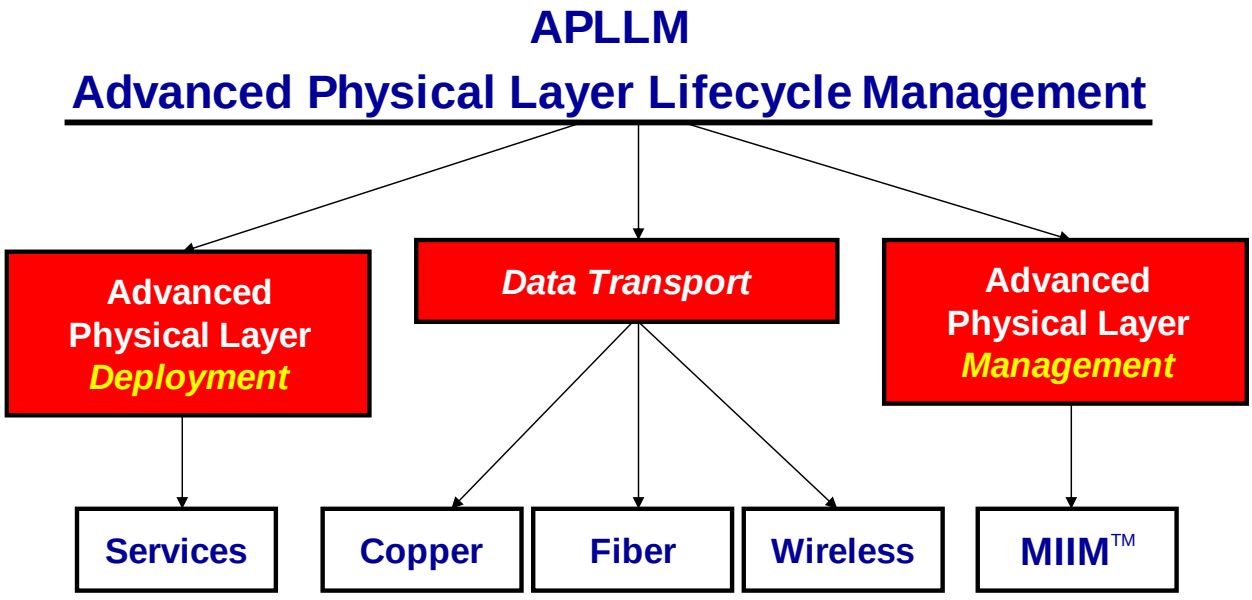
We appreciate your interest in Molex Premise Networks (MPN) training. This document contains MPN's training offers in support of its solutions. There are courses that familiarize you with the solution and its unique aspects as well as how to design, estimate, install, and support it.

About Molex Premise Networks

Molex Incorporated (symbol: MOLX) is a 70-year-old, US$3B developer of electronic, electrical and fiber optic interconnect solutions with 30,000 employees manufacturing in 59 facilities in 19 countries and participating on 70 industry standards committees. For more than 30 years, Molex has developed and manufactured solutions for IT infrastructures deployed worldwide.

Molex Premise Networks is a global leader in Advanced Physical Layer Lifecycle Management (APLLM), which delivers significant improvements in the planning, deployment, and management of your infrastructure investments. MPN's APLLM solutions:

- Increase Physical Layer productivity and process control
- Innovate the automation and information management of the Physical Layer
- Focus on the productivity of project and network stakeholders and the life-cycle of the infrastructure
- Integrate easily with existing network and business tools

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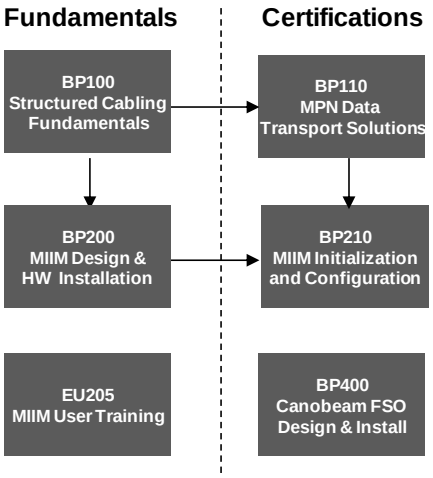
## Course Catalog

Molex has two tiers of training: Fundamentals that teaches entry-level material and Certifications for in-depth knowledge in a particular solution. Some courses have prerequisites that are required to be taken prior to the course. Not all courses are available in all regions; please check with Molex regarding availability. BICSI also recognizes Molex training, providing CECs to BICSI credential holders.




| | Course | Pre-requisites | Format | Class Size |
|---|---|---|---|---|
| BP100 | Structured Cabling Design and Installation | none | 0.5-day online + 1-day hands-on workshop | 5 - 10 |
| BP110 | MPN Data Transport Solutions | BP100 or 5 years cabling experience* | 0.25-day online | N/A |
| BP200 | MIIM Design and Hardware Installation | BP100 or 5 years cabling experience | 0.25-day online | N/A |
| EU205 | MIIM User Training | 5 years cabling experience | 0.5-day online | N/A |
| BP210 | MIIM Certification Workshop | 5 years networking experience* + BP110 | 1-day online + 1-day hands-on workshop | 3 - 5 |
| BP400 | Canobeam FSO Design and Installation | 5 years networking experience | 0.5-day online + 1-day hands-on workshop | 3 - 5 |

Certifications expire after 2 years — Subject to change without notice

BICSI CEC credits issued for most courses — *Must pass a Qualification Quiz

**BICSI Continuing Education Credit Recognition**

| | MPN Course | RCDD | NTS | WD | Installer2 Copper/Fiber | Technician | Certified Trainer |
|---|---|---|---|---|---|---|---|
| BP100 | Structured Cabling Design and Installation | 14 | | | 14 | 14 | 14 |
| BP110 | MPN Data Transport Solutions | 3 | | | 3 | 3 | 3 |
| BP200 | MIIM Design and Hardware Installation | 3 | | | 3 | 3 | 3 |
| EU205 | MIIM User Training | 8 | 4 | | 8 | 8 | 8 |
| BP210 | MIIM Certification Workshop | 11 | | | 11 | 11 | 11 |
| BP400 | Canobeam FSO Design and Installation | 7 | 7 | 7 | 7 | 7 | 7 |

## Venues

Molex delivers its training both on-line and a combination of on-line and on-site for certification workshops with quizzes and hands-on demonstrations.

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Course Fee

A customized Training Plan is created itemizing the expected venue and its expenses; however, some courses are taught by 3rd-party training partners of MPN who set their own rates. Training packages combining multiple courses or with multiple companies in attendance may be considered upon request. Training laptops are available for daily rental.

Confirmation details are sent automatically upon on-line registration. A 50% charge applies to cancellations made within 5 working days of the first day of the schedule session(s). Students not attending without canceling will not be reimbursed. Molex reserves the right to cancel any course within 1 week of its starting date.

Course Descriptions

BP100: STRUCTURED CABLING DESIGN AND INSTALLATION ..... 5

BP110: MPN DATA TRANSPORT SOLUTIONS ..... 8

BP200: MIIM DESIGN AND HARDWARE INSTALLATION ..... 10

EU205: MIIM USER TRAINING ..... 13

BP210: MIIM CERTIFICATION WORKSHOP ..... 17

BP400: CANOBEAM FSO DESIGN AND INSTALLATION ..... 22

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# BP100: STRUCTURED CABLING DESIGN AND INSTALLATION

Highlights

- A combination on-line and instructor-led, hands-on workshop that enables MPN Design and Installation professionals to specify, position, design, estimate, install, and support MPN's Data Transport Solutions, including its copper, fiber, and plug-n-play solutions. Theory is supplemented by exercises in which participants complete designs, see demonstrations using installation tools readily available in the industry, handle required products, and test installed channels. A survey of applicable TIA/EIA/ISO technical standards is provided.

- Upon completion of the course, participants will demonstrate competency to:
  - Position and quote the solutions confidently with customers
  - Design the optimal solution for the customer's application
  - Install, test, and support the solutions, including how to (a) properly lay and interconnect the medium, (b) test installed channels with industry-standard equipment, and (c) methodically detect and isolate faults in installations

- Requires attendance of complete course and a passing grade on exam. Participants with partial attendance may not be certified.

- Maximum of 10 participants per course

- Participants taking this course are not required to take BP110

- 14 BICSI Continuing Education Credits (CECs) for RCDD, Installer2 (copper / fiber), Technician, and Certified Trainer. (Note: BICSI only issues CECs to BICSI credential holders. See BICSI CEC Confirmation.)

Training Objectives

1) Understand MPN and its Advanced Physical Layer Management (APLLM) vision, its MIIM™ solution, it support services, and typical APLLM applications

2) Understand MPN's Data Transport Solutions and the unique techniques and procedures required to design and install them
   - Advantages of MPN's shielded Cat-6A solution for 10Gigabit performance
   - Properly demonstrated termination for MPN's Cat 6/6A jacks and SC fiber connector

3) Understand MPN's plug-and-play solutions
   - Copper ModLink™ and its connectivity using iPass™ connectors
   - Fiber Optic ModLink and its application in a data center

4) Understand the TIA/EIA/ISO technical standards applicable to structured cabling

5) Understand the architecture and design of industry-standard structured cabling systems

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6) Understand the evolution of the physical network and its interface and influence on the structured cabling system, including the OSI Model and LAN topologies, especially Ethernet

7) Understand theory, electrical characteristics, construction, termination of copper systems including Category 6 / Class E and Category 6 Augmented / Class EA

8) Understand theory, optical characteristics, construction, and termination of fiber systems

9) Train proper design, installation, documentation, and testing procedures including bend radii of various media, separation from power or hazardous sources, cable pull limits and other pull guidelines, working with fire stops, and proper labeling per the 606 standard
   - Channels, segments, patch panels, cross-connect patching field, media options, wiremap

Course Prerequisites and Pre-activities

- Knowledge and use of a Level III structured cabling tester and termination tools
- Required pre-reading: MPN Business Partner Overview, Structured Cabling Testing Basics, Copper Cable Troubleshooting Handbook, Fiber Testing Best Practices
- Recommended preview: Molex MIIM Overview

Course Description

The course has separate modules to allow for easier flow. Times shown are actual class time; breaks would be added as appropriate. The below outline is representative but not all inclusive of the subject matter:

**Module 0 - Introduction (15 minutes)**

- Course Groundrules, Objectives, and Agenda
- Participant Introductions and Expectations

**Module 1 - Molex Premise Networks (MPN) Overview (45 minutes)**

- Integrating the physical layer into the IT Network with MIIM
- Outdoor wireless connectivity with Canobeam Free Space Optics (FSO)
- Advantages and differentiators of MPN Solutions
- MPN Integrated Service Desk stands ready to serve you

**Module 2a – Structured Cabling Theory (3 hours)**

- OSI model
- Architectural considerations (typical channel, cross-connect and inter-connect topologies)
- Structured cabling applications and future-proofing
  - Gigabit and 10Gigabit Ethernet overview, applications, benefits, and challenges
  - Future applications (40Gigabit, 100Gigabit)
- Installation considerations (pathways, trays, conduits, grounding, cable size) and options (Open Office Cabling, Multi User Telecommunication Outlet, Consolidation Point)
- Copper media: cabling construction, category and class, twisted pair terminology, wiremap
- Electrical Parameters: Insertion loss, Return Loss, Crosstalk, Delay, ACR, etc.

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- History of fiber, cable and connector types and their characteristics
- Fiber media: cabling construction, class (OM1-4, OS1, OS2), connector types (LC, SC)
- Optical Parameters: propagation, attenuation, modality (Multimode, Singlemode)
- Fiber-to-the-Enclosure and Fiber-to-the-Desk
- Applicable standards and standards organizations (EIA/TIA, ISO, IEEE/ANSI)
  - 568: Cable types, max distances, color sequence, bend radius, terminations
  - 569: Cabling pathways, conduit sizes, equipment rack and rooms
  - 606: Administration, documentation, labeling and color coding
  - 607: Grounding
- Electrical and Fire Prevention codes and specifications

**Module 2b – Structured Cabling Installation [with exercises] (3 hours)**

- Grounding, cable and outlet preparation
- Hand termination of copper outlet
- Hand termination of fiber connector
- Telecomm Room troubleshooting and fault isolation example and exercise
- Applying for a Molex Warranty
- Getting help from the MPN Integrated Service Desk

**Module 3 - MPN PowerCat™ Copper Cabling Solutions (1 hour)**

- Alien Crosstalk and grounding and its impact on 10Gigabit performance
- Installation practices: video termination of PowerCat 6 and 6A jacks
- Testing PowerCat 6A – unique procedures and parameters

**Module 4 – MPN Lightband™ Fiber Optic Solutions (45 minutes)**

- Fiber considerations
- Installation practices: video termination of Xpress G2 SC Connector

**Module 5 - ModLink Plug-and-Play Solution (15 minutes)**

- Advantages of pre-terminated assemblies
- Copper ModLink and its connectivity using iPass connectors
- Fiber Optic ModLink

**Module 6 – Structured Cabling Design [with exercises] (4 hours)**

- How to calculate a link loss budget (fiber manually, copper with a tester)
- Design process
- Rack layout, labeling, numbering, and documentation
- Inter-connect and cross-connect management (modular patches, patch cord management)
- Advantages of MIIM in the Telecomm Room and Data Center
- Cable support and routing (conduits, trays, avoiding power sources)
- Cable management (vertical and horizontal rack management, ring runs, pathways)
- Design examples and exercises (single floor Telecomm Room, multi-floor, data center, campus)

**Module 7 – Course Review and Quizzes (1 hour)**

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# BP110: MPN DATA TRANSPORT SOLUTIONS

Highlights

- An on-line course that enables MPN Design and Installation professionals to specify, position, design, estimate, install, and support MPN's Data Transport Solutions, including its copper, fiber, and plug-n-play solutions. Participants see demonstrations using installation tools readily available in the industry. A survey of applicable TIA/EIA/ISO technical standards is provided.

- Upon completion of the course, participants will demonstrate competency to:
  - Position and quote the solutions confidently with customers
  - Design the optimal solution for the customer's application
  - Install, test, and support the solutions, including how to (a) properly lay and interconnect the medium, and (b) test installed channels with industry-standard equipment

- 2-year MPN certification upon attendance of complete course and a passing grade on exam. Participants with partial attendance may not be certified.

- 3 BICSI Continuing Education Credits (CECs) for RCDD, Installer2 (copper / fiber), Technician, and Certified Trainer. (Note: BICSI only issues CECs to BICSI credential holders. See BICSI CEC Confirmation.)

Training Objectives

1) Understand MPN and its Advanced Physical Layer Management (APLLM) vision, its MIIM™ solution, it support services, and typical APLLM applications

2) Understand MPN's Data Transport Solutions and the unique techniques and procedures required to design and install them
   - Advantages of MPN's shielded Cat-6A solution for 10Gigabit performance
   - Properly demonstrated termination for MPN's Cat 6/6A jacks and SC fiber connector

3) Understand MPN's plug-and-play solutions
   - Copper ModLink™ and its connectivity using iPass™ connectors
   - Fiber Optic ModLink and its application in a data center

4) Understand the architecture and design of industry-standard structured cabling systems

Course Prerequisites and Pre-activities

- Required previous attendance in BP100 (or equivalent upon MPN's prior approval) that provide fundamental knowledge in structure cabling
- Knowledge and use of a Level III structured cabling tester and termination tools
- Required pre-reading: MPN Business Partner Overview
- Recommended preview: Structured Cabling Testing Basics, Copper Cable Troubleshooting Handbook, Fiber Testing Best Practices, Molex MIIM Overview

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Course Description

The course has separate modules to allow for easier flow. Times shown are actual class time; breaks would be added as appropriate. The below outline is representative but not all inclusive of the subject matter:

**Module 0 - Introduction (15 minutes)**

- Course Groundrules, Objectives, and Agenda
- Participant Introductions and Expectations

**Module 1 - Molex Premise Networks (MPN) Overview (45 minutes)**

- Integrating the physical layer into the IT Network with MIIM
- Outdoor wireless connectivity with Canobeam Free Space Optics (FSO)
- Advantages and differentiators of MPN Solutions
- MPN Integrated Service Desk stands ready to serve you

**Module 2 – Structured Cabling Highlights (30 minutes)**

- Architectural considerations (typical channel, cross-connect and inter-connect topologies)
- Cable Management (vertical and horizontal rack management, ring runs, pathways, trays, conduits, grounding)
- Installation considerations (pathways, trays, conduits, grounding, cable size)
- Applicable standards and codes update (EIA/TIA, ISO, IEEE/ANSI, NEC)
- Gigabit and 10Gigabit Ethernet overview, applications, benefits, and challenges
- Future applications (40Gigabit, 100Gigabit)

**Module 3 - MPN PowerCat™ Copper Cabling Solutions (60 minutes)**

- Alien Crosstalk and grounding and its impact on 10Gigabit performance
- Installation practices: video termination of PowerCat 6 and 6A jacks
- Testing PowerCat 6A – unique procedures and parameters

**Module 4 – MPN Lightband™ Fiber Optic Solutions (45 minutes)**

- Fiber considerations
- Installation practices: video termination of Xpress G2 SC Connector

**Module 5 - ModLink Plug-and-Play Solution (15 minutes)**

- Advantages of pre-terminated assemblies
- Copper ModLink and its connectivity using iPass connectors
- Fiber Optic ModLink

**Module 6 – Course Review and Quizzes (30 minutes)**

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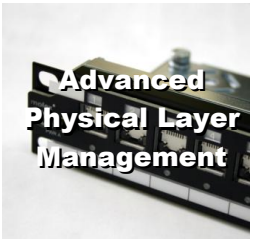


# BP200: MIIM DESIGN AND HARDWARE INSTALLATION

Highlights

- An on-line course that enables MPN Design and Installation Hardware professionals to specify, position, design, estimate, install, and support the hardware components of MPN's MIIM System. Hardware familiarization is supplemented by exercises in which participants complete designs and see demonstrations.

- Upon completion of the course, participants will demonstrate competency to:
  - Position and quote the MIIM solution confidently with customers
  - Design the optimal MIIM hardware for the their application
  - Install, test, manage, and support an installed MIIM hardware

- 3 BICSI Continuing Education Credits (CECs) for RCDD, Installer2 (copper / fiber), Technician, and Certified Trainer. (Note: BICSI only issues CECs to BICSI credential holders. See BICSI CEC Confirmation.)

Training Objectives

1) Understand MPN and its Advanced Physical Layer Management (APLLM) vision, its MIIM™ solution, it support services, and typical APLLM applications

2) Understand the MIIM value proposition, competitive advantages and differentiators

3) Train proper design, installation, and testing procedures on MIIM hardware
   - Design cross-connect and inter-connect MIIM solutions
   - Install and configure MIIM hardware (scanners, patch panels and outlet terminators)

4) Perform MIIM troubleshooting and fault isolation

5) Understand the competitive advantages and differentiators of MIIM

Course Prerequisites and Pre-activities

- Required previous attendance in BP100 (or equivalent upon MPN's prior approval) that provides fundamental knowledge of structure cabling or BP110 MPN Data Transport Solutions training course
- Knowledge on how to punch down patch panels and prior use of a multi-meter and termination tools
- Required pre-reading: Molex MIIM Overview
- Recommended preview: MIIM User's Manual

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Course Description

The course has separate modules to allow for easier flow. Times shown are actual class time; breaks would be added as appropriate. The below outline is representative of the subject matter:

| Module | MIIM™ Advanced Physical Layer Management | BP210 MIIM Certification Workshop | | | | |
|---|---|---|---|---|---|---|
| | | BP200 | | EU205 MIIM User Training | | |
| | | MIIM HARDWARE | SOFTWARE | IT ADMINISTRATOR | TECHNICIAN | OBSERVER |
| | | Installs hardware components of MIIM and should have familiarity around a TR or data center | Installs MIIM server and configures MIIM for site architecture | Establishes user accounts and permissions, performs back-up and import/export of data into MIIM | Performs daily functions of MIIM, including workorder management, patching, and troubleshooting | Views information about the IT physical network and its attached devices as reported by MIIM |
| 0 | Course Introduction | Yes | Yes | Yes | Yes | Yes |
| 1 | Molex Premise Networks (MPN) Overview | Yes | Yes | Yes | | |
| 2 | MIIM Overview | Yes | Yes | Yes | Yes | Yes |
| 3 | MIIM Engineering Design | Yes | | Yes | | |
| 4 | MIIM Hardware Installation / Hands on | Yes | | | | |
| 5 | Recognizing the MIIM Scanner | | Yes | Yes | | |
| 6 | MIIM Software Installation | | Yes | | | |
| 7 | MIIM Software overview | | | Yes | Yes | Yes |
| 8 | Utilizing MIIM / Infrastructure Management | | | Yes | Yes | Yes |
| 9 | Work orders | | | Yes | Yes | Yes |
| 10 | Event logs & Alarms | | | Yes | Yes | Yes |
| 11 | Event-Driven & Auto Discovery | | Yes | Yes | | |
| 12 | SNMP | | Yes | Yes | | |
| 13 | MIIM Reports | | | Yes | | |
| 14 | Import & Export | | | Yes | | |
| 15 | MIIM Support & Troubleshooting | | Yes | Yes | | |
| 16 | MIIM Value Proposition - Summary | Yes | | | | |
| 17 | Wrap-up & Exam | Yes | Yes | Yes | Yes | Yes |

Subject to change without notice

*Note: Modules 5 through 15 are purposely deleted below*

**Module 0 - Introduction (15 minutes)**

- Course Ground Rules, Objectives, and Agenda
- Participant Introductions and Expectations

**Module 1 - Molex Premise Networks (MPN) Overview (45 minutes)**

- Integrating the physical layer into the IT Network with MIIM
- Outdoor wireless connectivity with Canobeam Free Space Optics (FSO)
- Advantages and differentiators of MPN Solutions
- MPN Integrated Service Desk stands ready to serve you

**Module 2 - MIIM System Overview (30 minutes)**

- MIIM simplifies the automation of the Physical Layer
- Issues in Managing the Physical Layer
- Monitoring the complete channel / end-to-end / channel states
- Benefits and unique features of the MIIM System
- MIIM Architectures : Cross-Connect & Inter-Connect
- System Overview: scanner, patch panels with LEDs, outlet terminator, application
- Why a MIIM Cat 6A Shielded Solution?

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**Module 3 - MIIM Design [with exercise] (60 minutes)**

- MIIM Design Principles
  - Ethernet standards applies
  - Sensing network attached devices
  - Architectural flexibility with MIIM
  - MIIM in data centers
  - Analog PBXs considerations & connection to a CC Panel
  - What to Avoid
  - MIIM Configuration guidelines
  - MIIM Pre-Install Survey Form
- Design Exercise (Design a cross-connect MIIM System)

**Module 4 - MIIM Hardware Installation [with exercise] (60 minutes)**

- MIIM System Installation Procedure
  - Scanner & MIIM Patch Panels (Copper and Fibre)
  - Grounding of MIIM Scanner and Patch Panels
  - Important Safety notices
  - Hardware installation verification
  - Outlet Terminators
- Installation Exercise (Build a MIIM System)

**Module 16 – MIIM Value Proposition Summary (15 minutes)**

- How can MIIM benefit your customer?
- Exclusive features and competitive advantage of MIIM

**Module 17 – Course Review and Exam (60 minutes)**

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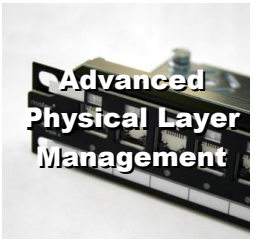
# EU205: MIIM USER TRAINING




Highlights

- An on-line course that enables Network Managers and Technicians to use and support MPN's MIIM System. The course provides detailed instruction on how to initialize and configure the system software and make moves/adds/changes to that configuration after the initial deployment is complete.

- Upon completion of the course, participants will competently operate, manage, and support an installed MIIM software

- 2-year MPN certification upon attendance of complete course and a passing grade on quizzes. Participants with partial attendance may not be certified.

- Maximum of 5 participants per course

- Participants taking this course are not required to BP200

- 8 BICSI Continuing Education Credits (CECs) for RCDD, Installer2 (copper / fiber), Technician, and Certified Trainer and 4 CECs for NTS. (Note: BICSI only issues CECs to BICSI credential holders. See BICSI CEC Confirmation.)

Training Objectives

1) Understand networking required to integrate MIIM into LANs

2) Train proper design, installation, and testing procedures using a live MIIM
   - Install and configure MIIM hardware (scanners, patch panels and outlet terminators)
   - Install and configure MIIM software and software environment (MS Win Server 2008R2, SQL-Server Express 2008R2 64-Bit, Web Services, and MS.Net)
   - Create and populate a MIIM database
   - Use MIIM work-orders, reports, statistics, back-up & restore

3) Perform MIIM troubleshooting and fault isolation

Course Prerequisites and Pre-activities

- Minimum of 5 years of solid practical experience in networking or structured cabling
- Working knowledge of networks, including TCP/IP, Microsoft server setup and configuration; IIS; network commands such as ping, tracert, arp, and ipconfig; and network applications such as AngryIPScanner, Wireshark
- Knowledge of PoE systems
- Required pre-reading: Molex MIIM Overview
- Recommended preview: MIIM User's Manual

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Course Description

The course has separate modules to allow for easier flow and to facilitate learning by user-type. MIIM-certified participants are expected to take all of the modules below. Times shown are actual class time; breaks would be added as appropriate. The below outline is representative but not all inclusive of the subject matter:

| Module | MIIM™ Advanced Physical Layer Management | BP210 MIIM Certification Workshop | | | | |
|---|---|---|---|---|---|---|
| | | BP200 | | EU205 MIIM User Training | | |
| | | MIIM HARDWARE | SOFTWARE | IT ADMINISTRATOR | TECHNICIAN | OBSERVER |
| | | Installs hardware components of MIIM and should have familiarity around a TR or data center | Installs MIIM server and configures MIIM for site architecture | Establishes user accounts and permissions, performs back-up and import/export of data into MIIM | Performs daily functions of MIIM, including workorder management, patching, and troubleshooting | Views information about the IT physical network and its attached devices as reported by MIIM |
| 0 | Course Introduction | Yes | Yes | Yes | Yes | Yes |
| 1 | Molex Premise Networks (MPN) Overview | Yes | Yes | Yes | | |
| 2 | MIIM Overview | Yes | Yes | Yes | Yes | Yes |
| 3 | MIIM Engineering Design | Yes | | Yes | | |
| 4 | MIIM Hardware Installation / Hands on | Yes | | | | |
| 5 | Recognizing the MIIM Scanner | | Yes | Yes | | |
| 6 | MIIM Software Installation | | Yes | | | |
| 7 | MIIM Software overview | | | Yes | Yes | Yes |
| 8 | Utilizing MIIM / Infrastructure Management | | | Yes | Yes | Yes |
| 9 | Work orders | | | Yes | Yes | Yes |
| 10 | Event logs & Alarms | | | Yes | Yes | Yes |
| 11 | Event-Driven & Auto Discovery | | Yes | Yes | | |
| 12 | SNMP | | Yes | Yes | | |
| 13 | MIIM Reports | | | Yes | | |
| 14 | Import & Export | | | Yes | | |
| 15 | MIIM Support & Troubleshooting | | Yes | Yes | | |
| 16 | MIIM Value Proposition - Summary | Yes | | | | |
| 17 | Wrap-up & Exam | Yes | Yes | Yes | Yes | Yes |

Subject to change without notice

*Note: Modules 4, 5, 6, 16, and 17 are purposely deleted below*

**Module 0 - Introduction (15 minutes)**

- Course Ground Rules, Objectives, and Agenda
- Participant Introductions and Expectations

**Module 1 - Molex Premise Networks (MPN) Overview (45 minutes)**

- Integrating the physical layer into the IT Network with MIIM
- Outdoor wireless connectivity with Canobeam Free Space Optics (FSO)
- Advantages and differentiators of MPN Solutions
- MPN Integrated Service Desk stands ready to serve you

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**Module 2 - MIIM System Overview (30 minutes)**

- MIIM simplifies the automation of the Physical Layer
- Issues in Managing the Physical Layer
- Monitoring the complete channel / end-to-end / channel states
- Benefits and unique features of the MIIM System
- MIIM Architectures : Cross-Connect & Inter-Connect
- System Overview: scanner, patch panels with LEDs, outlet terminator, application
- Why a MIIM Cat 6A Shielded Solution?

**Module 3 - MIIM Design [with exercise] (60 minutes)**

- MIIM Design Principles
  - Ethernet standards applies
  - Sensing network attached devices
  - Architectural flexibility with MIIM
  - MIIM in data centers
  - Analog PBXs considerations & connection to a CC Panel
  - What to Avoid
  - MIIM Configuration guidelines
  - MIIM Pre-Install Survey Form
- Design Exercise (Design a cross-connect MIIM System)

**Module 7 – MIIM Software Overview (60 minutes)**

- GUI Introduction and Hot Keys
- Getting Started
  - Server License and Authentication
  - Permissions Management
- Database Management
- Scheduling Backups

**Module 8 – Utilizing MIIM / Infrastructure Management (90 minutes)**

- Introduction
  - Edit Mode
- Building Assets, including the database hierarchy and assigning maps
- Building the Virtual Rack
- Getting prepared for connections
- Infrastructure Management

Exercises: Build your own rack, import drawings, map assets to location

**Module 9 – Work Orders [with exercise] (45 minutes)**

- Creating a work order
- Making connections
- Work Orders Management
- Channel Bar / Principles & Legend
- The Orange outlet in the channel bar
- Mixed connections in the Rack

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**Module 10 – Event logs and Alarms (30 minutes)**

- Event Alarms
- Alarm Events types
- Event Logs
- Messaging and RSS Feeds [V2.1]

**Module 11 – Smart Polling and Layer 1 Discovery (30 minutes)**

- Event-Driven Discovery
- Auto Discovery

**Module 12 – MIIM Reports (30 minutes)**

- Introduction
- Generating Templates
- Running Reports

**Module 13 – Import and Export (30 minutes)**

- Import Spreadsheet & Database
- Export Spreadsheet
- Backup and Restore procedures

**Module 14 – MIIM FAQs / Support and Troubleshooting (30 minutes)**

- MIIM Forum
- FAQs : Administration / Connectivity / Design / Installation / Licensing / PoE / Scanner / System / Smart Polling /
- Some known limitations
- How to raise a ticket on the Molex CSP

**Module 15 – 3rd Party Integration / SNMP (15 minutes)**

- Using SNMP with MIIM

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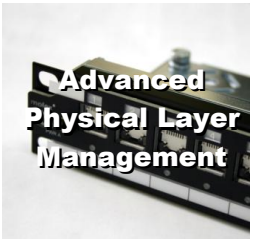
# BP210: MIIM CERTIFICATION WORKSHOP




Highlights

- A combination on-line and instructor-led, hands-on workshop that enables MPN Design and Installation Hardware and Network professionals to specify, position, design, estimate, install, and support MPN's MIIM System. System familiarization is supplemented by exercises in which participants complete designs, see demonstrations, and handle products. The course provides detailed, hands-on instruction on how to initialize and configure the system software and make moves/adds/changes to that configuration after the initial deployment is complete.

- Upon completion of the course, participants will demonstrate competency to:
  - Position and quote the MIIM solution confidently with customers
  - Design the optimal MIIM solution for the their application
  - Install, test, manage, and support an installed MIIM solution

- 2-year MPN certification upon attendance of complete course and a passing grade on quizzes. Participants with partial attendance may not be certified.

- 11 BICSI Continuing Education Credits (CECs) for RCDD, Installer2 (copper / fiber), Technician, and Certified Trainer. (Note: BICSI only issues CECs to BICSI credential holders. See BICSI CEC Confirmation.)

- Maximum of 5 participants per course

- Participants taking this course are not required to attend BP200 nor EU205

Training Objectives

1) Understand MPN and its Advanced Physical Layer Management (APLLM) vision, its MIIM™ solution, it support services, and typical APLLM applications

2) Understand the MIIM value proposition, competitive advantages and differentiators

3) Understand networking required to integrate MIIM into LANs

4) Train proper design, installation, and testing procedures using a live MIIM system
   - Design cross-connect and inter-connect MIIM solutions
   - Install and configure MIIM hardware (scanners, patch panels and outlet terminators)
   - Install and configure MIIM software and software environment (MS Win Server 2008R2, SQL-Server Express 2008R2 64-Bit, Web Services, and MS.Net)
   - Create and populate a MIIM database
   - Use MIIM work-orders, reports, statistics, back-up & restore

5) Perform MIIM troubleshooting and fault isolation

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## Course Prerequisites and Pre-activities

- Required previous attendance in BP100 (or equivalent upon MPN's prior approval) that provides fundamental knowledge of structure cabling or BP110 MPN Data Transport Solutions training course
- Minimum of 5 years of solid practical experience in networking or structured cabling
- Knowledge on how to punch down patch panels and prior use of a multi-meter and termination tools
- Working knowledge of networks, including TCP/IP, Microsoft server setup and configuration; IIS; network commands such as ping, tracert, arp, and ipconfig; and network applications such as AngryIPScanner, Wireshark
- Knowledge of PoE systems
- Required pre-reading: Molex MIIM Overview
- Recommended preview: MIIM User's Manual

## Course Description

The course has separate modules to allow for easier flow and to facilitate learning by user-type. MIIM-certified participants are expected to take all of the modules below. Times shown are actual class time; breaks would be added as appropriate. The below outline is representative but not all inclusive of the subject matter:

| Module | MIIM™ Advanced Physical Layer Management | BP210 MIIM Certification Workshop | | | | |
|---|---|---|---|---|---|---|
| | | BP200 | | EU205 MIIM User Training | | |
| | | MIIM HARDWARE | SOFTWARE | IT ADMINISTRATOR | TECHNICIAN | OBSERVER |
| | | Installs hardware components of MIIM and should have familiarity around a TR or data center | Installs MIIM server and configures MIIM for site architecture | Establishes user accounts and permissions, performs back-up and import/export of data into MIIM | Performs daily functions of MIIM, including workorder management, patching, and troubleshooting | Views information about the IT physical network and its attached devices as reported by MIIM |
| 0 | Course Introduction | Yes | Yes | Yes | Yes | Yes |
| 1 | Molex Premise Networks (MPN) Overview | Yes | Yes | Yes | | |
| 2 | MIIM Overview | Yes | Yes | Yes | Yes | Yes |
| 3 | MIIM Engineering Design | Yes | | Yes | | |
| 4 | MIIM Hardware Installation / Hands on | Yes | | | | |
| 5 | Recognizing the MIIM Scanner | | Yes | Yes | | |
| 6 | MIIM Software Installation | | Yes | | | |
| 7 | MIIM Software overview | | | Yes | Yes | Yes |
| 8 | Utilizing MIIM / Infrastructure Management | | | Yes | Yes | Yes |
| 9 | Work orders | | | Yes | Yes | Yes |
| 10 | Event logs & Alarms | | | Yes | Yes | Yes |
| 11 | Event-Driven & Auto Discovery | | Yes | Yes | | |
| 12 | SNMP | | Yes | Yes | | |
| 13 | MIIM Reports | | | Yes | | |
| 14 | Import & Export | | | Yes | | |
| 15 | MIIM Support & Troubleshooting | | Yes | Yes | | |
| 16 | MIIM Value Proposition - Summary | Yes | | | | |
| 17 | Wrap-up & Exam | Yes | Yes | Yes | Yes | Yes |

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**Module 0 - Introduction (15 minutes)**

- Course Ground Rules, Objectives, and Agenda
- Participant Introductions and Expectations

**Module 1 - Molex Premise Networks (MPN) Overview (45 minutes)**

- Integrating the physical layer into the IT Network with MIIM
- Outdoor wireless connectivity with Canobeam Free Space Optics (FSO)
- Advantages and differentiators of MPN Solutions
- MPN Integrated Service Desk stands ready to serve you

**Module 2 - MIIM System Overview (30 minutes)**

- MIIM simplifies the automation of the Physical Layer
- Issues in Managing the Physical Layer
- Monitoring the complete channel / end-to-end / channel states
- Benefits and unique features of the MIIM System
- MIIM Architectures : Cross-Connect & Inter-Connect
- System Overview: scanner, patch panels with LEDs, outlet terminator, application
- Why a MIIM Cat 6A Shielded Solution?

**Module 3 - MIIM Design [with exercise] (60 minutes)**

- MIIM Design Principles
  - Ethernet standards applies
  - Sensing network attached devices
  - Architectural flexibility with MIIM
  - MIIM in data centers
  - Analog PBXs considerations & connection to a CC Panel
  - What to Avoid
  - MIIM Configuration guidelines
  - MIIM Pre-Install Survey Form
- Design Exercise (Design a cross-connect MIIM System)

**Module 4 - MIIM Hardware Installation [with exercise] (60 minutes)**

- MIIM System Installation Procedure
  - Scanner & MIIM Patch Panels (Copper and Fibre)
  - Grounding of MIIM Scanner and Patch Panels
  - Important Safety notices
  - Hardware installation verification
  - Outlet Terminators
- Installation Exercise (Build a MIIM System)

**Module 5 - Recognizing the MIIM Scanner in the LAN [with exercise] (30 minutes)**

- Physical interface (status lights, firmware, confirmation of scanner-server interface and scanner-patch panel interface)
- Scanner web interface (home screen / scanner debug / configuration and parameters)
- Software interface (firmware & application versions)
- Changing a Scanner to Inter-Connect 1152 channels

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**Module 6 –MIIM Software Installation [with exercise] (1 hour + debug time)**

- Introduction : Installing MIIM on a properly configured Server
- Pre-settings / Set IP Configuration / Configuring Server Roles / IIS / MS .NET / DHCP Server
- .NET Pool Identity
- SQL Server installation, initialization, and configuration
- Folder sharing & Permissions
- MS Silverlight & Oracle Java engine
- MIIM Application Installation
- MIIM Site License Server
- Crystal Reports

**Module 7 – MIIM Software Overview (60 minutes)**

- GUI Introduction and Hot Keys
- Getting Started
  - Server License and Authentication
  - Permissions Management
- Database Management
- Scheduling Backups

**Module 8 – Utilizing MIIM / Infrastructure Management (90 minutes)**

- Introduction
  - Edit Mode
- Building Assets, including the database hierarchy and assigning maps
- Building the Virtual Rack
- Getting prepared for connections
- Infrastructure Management
- Exercises: Build your own rack, import drawings, map assets to location

**Module 9 – Work Orders [with exercise] (45 minutes)**

- Creating a work order
- Making connections
- Work Orders Management
- Channel Bar / Principles & Legend
- The Orange outlet in the channel bar
- Mixed connections in the Rack

**Module 10 – Event logs and Alarms (30 minutes)**

- Event Alarms
- Alarm Events types
- Event Logs
- Messaging & RSS Feeds[V2.1]

**Module 11 – Smart Polling and Layer 1 Discovery (30 minutes)**

- Event-Driven Discovery

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- Auto Discovery

**Module 12 – MIIM Reports (30 minutes)**

- Introduction
- Generating Templates
- Running Reports

**Module 13 – Import and Export (30 minutes)**

- Import Spreadsheet & Database
- Export Spreadsheet
- Backup and Restore procedures

**Module 14 – MIIM Support and Troubleshooting (30 minutes)**

- MIIM Forum
- FAQs : Administration / Connectivity / Design / Installation / Licensing / PoE / Scanner / System / Smart Polling /
- Some known limitations
- How to raise a ticket on the Molex CSP

**Module 15 – 3rd Party Integration / SNMP (15 minutes)**

- Introduction
- Using SNMP with MIIM

**Module 16 – MIIM Value Proposition Summary (15 minutes)**

- How can MIIM benefit your customer?
- Exclusive features and competitive advantage of MIIM

**Module 17 – Course Review and Quizzes (60 minutes)**

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# BP400: CANOBEAM FSO DESIGN AND INSTALLATION

Highlights

- A combination on-line and instructor-led, hands-on workshop that enables MPN Design and Installation professionals to position, design, estimate, and install MPN's Canobeam Solution. Participants learn free space optics theory, design and installation criteria, site survey and preparation, system set up and mounting, and basic troubleshooting techniques. Includes hands-on alignment of a Canobeam link.

- Upon completion of the course, participants will demonstrate competency to:
  - Position and quote the Canobeam solution confidently with customers
  - Design the optimal Canobeam solution for the customer's application
  - Install, test, and support Canobeam in the field

- 3-year MPN certification upon attendance of complete course and a passing grade on quizzes. Participants with partial attendance may not be certified.

- Maximum of 5 participants per course

- 7 BICSI Continuing Education Credits (CECs) for RCDD, NTS, WD, Installer2 (copper / fiber), Technician, and Certified Trainer. (Note: BICSI only issues CECs to BICSI credential holders. See BICSI CEC Confirmation.)

Training Objectives

1) Understand MPN and its Advanced Physical Layer Management (APLLM) vision, its MIIM™ solution, it support services, and typical APLLM applications

2) Understand the Canobeam value proposition, competitive advantages and differentiators

3) Understand networking required to integrate Canobeam into LANs

4) Train proper design, installation, and testing procedures using a live Canobeam

5) Perform Canobeam troubleshooting and fault isolation

Course Prerequisites and Pre-activities

- Previous attendance in BP100 (or equivalent MPN prior approval required)
- Working knowledge of networks, including TCP/IP; network commands such as ping, tracert, arp, and ipconfig; and network applications such as AngryIPScanner, Wireshark
- Required pre-reading: Canobeam User's Manual
- Recommended preview:

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Course Description

The course has separate modules to allow for easier flow. Times shown are actual class time; breaks would be added as appropriate. The below outline is representative but not all inclusive of the subject matter:

**Module 0 - Introduction (15 minutes)**

- Course Groundrules, Objectives, and Agenda
- Participant Introductions and Expectations

**Module 1 - Molex Premise Networks (MPN) Overview (45 minutes)**

- Integrating the physical layer into the IT Network with MIIM
- Outdoor wireless connectivity with Canobeam Free Space Optics (FSO)
- Advantages and differentiators of MPN Solutions
- MPN Integrated Service Desk stands ready to serve you

**Module 2 – FSO Fundamentals (30 minutes)**

- Technology overview
- Canobeam models
- Distance versus bandwidth
- Atmospheric effects

**Module 3 – Canobeam Preparation (45 minutes)**

- Installation preparations
- Mounts and adapters
- Network equipment specification and connectivity
- Power

**Module 4 – Canobeam Installation (45 minutes)**

- Mounting and installation
- Alignment
- Precautions and installation tips

**Module 5 – Network Integration and Canobeam Troubleshooting (60 minutes)**

- TELNET menu access
- FTP server functions
- Log retrieval and Serviceman log analysis
- Possible fault causes
- SNMP setup and troubleshooting checklist

**Module 6 – Canobeam Hands-on Alignment [with exercise] (120 minutes)**

**Module 7 – Course Review and Quizzes (30 minutes)**

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